Math 211
Quiz 10

F 19 Jul 2019

Your name : _____

Exercise

(5 pt) Consider the matrix

$$A = \begin{bmatrix} 0 & 0 & 1 \\ 1 & 2 & 0 \\ -2 & -2 & 1 \end{bmatrix}.$$

(a) (2 pt) Show that $\det A = 2$. *Hint:* Use expansion by minors along row 1. (Why?)

(b) (2 pt) Apply the row reduction algorithm to $\begin{bmatrix} A & \vdots & I_3 \end{bmatrix}$ to show that

$$A^{-1} = \frac{1}{2} \begin{bmatrix} 2 & -2 & -2 \\ -1 & 2 & 1 \\ 2 & 0 & 0 \end{bmatrix}.$$

Hint: Recall that one of the three elementary row operations lets us swap any two rows.

(c) (1 pt) Explain how existence of A^{-1} in part (b) is consistent with our answer in part (a).